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A Creel Census of Goose Lake 1979.

MANITOBA
DEPARTMENT OF NATURAL RESOURCES
Fisheries Branch
Biological Services

MS Report No. 82-13, 47pp.

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ABSTRACT

A creel census and fish sampling program was conducted on Goose Lake for 22 randomly selected days in the months of May, June, July, August and September of 1979. The angler harvest is composed of northern pike *(Esox lucius)* and walleye (*Stizostedion vitreum vitreum)*. Anglers were interviewed upon returning to the landing as to the number and species of fish caught and released, hours spent angling, and anglers' place of residence. It is assumed that the number of fish caught included those consumed as shore lunches. In addition, 32 northern pike and 195 walleye were measured (fork length), weighed and fin samples removed.

During the summer of 1979, anglers were estimated to have caught 14,000 principal game fish. They retained an estimated 5,000 game fish. The total estimated angler harvest of game fish from the creel census in 1979 for Goose Lake was 3,600 kg or 0.28 kg/ha. Of this 3,600 kg of game fish, northern pike represented 516 kg and walleye 3,110 kg.

The catch per angler hour (C.U.E.) during the summer of 1979, based on actual interview results, was 6.70 for all species and 6.63 for principal game fish (northern pike and walleye).

In addition to the summer angling, a substantial amount of ice fishing occurs on Goose Lake from local area residents. While no estimate of winter angler harvest is available, the catch of game fish is reported to be equal or greater than the summer harvest (personal communication - Natural Resource Officers).

Goose Lake supports an active annual commercial fishery. The commercial quota on Goose Lake is 25,500 kg of northern pike, walleye and whitefish, of which not more than 2,300 kg may be northern pike and walleye. In the summer of 1979, 706 kg of northern pike and 230 kg of walleye were harvested in the commercial net fishery.

The MSY for Goose Lake is 11.49 kg/ha or 148,221 kg per year for all species. From Schlick's gill netting survey 1967-68, game fish comprised 61.3% of the total fish caught. This 61.3% represents an MSY (maximum sustained yield) of 90,859 kg of game fish.

The total estimated annual harvest of game fish from sports and commercial fishing on Goose Lake cannot be accurately estimated at this time. It would appear, however, that the present harvest is well below the maximum sustainable yield.

Approximately 30% of anglers fishing on Goose Lake during the summer of 1979 were non-resident Americans; the remaining 70% were Manitobans.

ACKNOWLEDGEMENTS

The Department is grateful to Carolyn Abrey for an excellent job of data collection and record keeping during the creel census. The field project and data analysis was directed and supervised by Bruce Wright. His assistance in review and editing of this report is also acknowledged. Thanks are extended to Dr. J.F. O'Connor for his editorial advice and to Mr. H. Valiant for his assistance and advice in organization of the sampling schedules and the computer analysis of the compiled data. Gratitude is conveyed to Kathy Bulloch and Carol Gray for an excellent job in typing the manuscript.

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INTRODUCTION

The Goose Lake fishery resources has supported a commercial fishery since the early 1940's (Schlick, 1973). The legal mesh size is 134 mm. The quota is 25,500 kg of northern pike (*Esox lucius*), walleye (*Stizostedion vitreum vitreum*) and whitefish (*Coregonus clupeaformis*)of which not more than 2,300 kg may be northern pike and walleye (Schedule XVI).

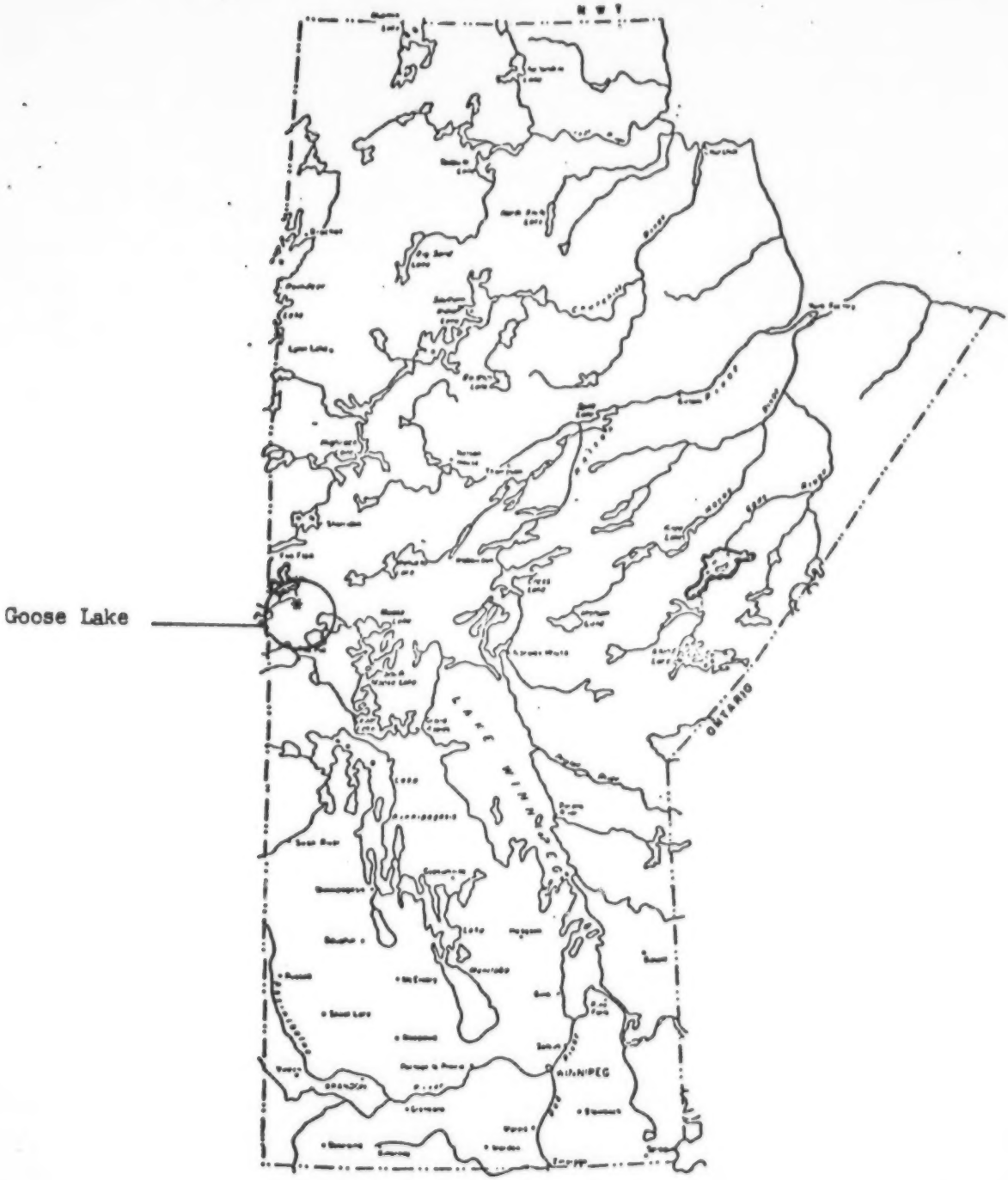
Goose Lake has traditionally been a winter fishery. However, in 1975, an experimental fall fishery was permitted which was designed to concentrate harvest efforts on spawning whitefish and to help offset the high costs associated with a winter fishery. An annual fall fishery is now permitted in conjunction with a winter season.

Goose Lake also supports a substantial sport fishery with the main emphasis on walleye (Sopuck, 1977). Parks Branch maintains a Water Access and Picnic Site at the southeast corner of the lake, which is regularly used in the spring by the lodges in the Cranberry Portage area as an "out lake" complete with boat cache.

At present, management of the lake stresses the selective commercial harvest of whitefish and the reserving of game fish (walleye and pike) for the sports fishery.

Goose Lake ($54^{o}28'$ $101^{o}30'$) is situated sixty-five kilometers north of The Pas and just west of the P.T.H. # 10 (Figure 1).

Figure 1. Map of Manitoba showing location of Goose Lake



The vegetation surrounding the west half of the lake is a mixed forest type consisting of broadleaf and coniferous trees, while the eastern portion of the lake is primarily black spruce. The surface area of the lake is 129 square kilometers (12,900 hectares). It is a relatively shallow lake with a maximum depth of 4.2 meters and an average depth of 1.8 meters. The average secchi transparency is 1.4 m and T.D.S. is 211 ppm. Schlick (1973) provides further details on lake morphometry and water chemistry.

The purpose of this study on Goose Lake was to estimate the annual summer angler harvest. Current commercial harvests and speculated winter angler harvests are also discussed in order to evaluate the current levels of exploitation on game fish stocks.

METHODS

The creel census survey was carried out on twenty-two randomly selected days during the months of May, June, July, August and September. Three week-days and three weekend days per month were selected for June, July and August. May was limited to one weekday and two weekend days and September to only one weekday, due to the unavailability of fishery personnel (Appendix 1).

Fisheries personnel were stationed at the Park Branch Water Access and Picnic Site on the southeast shore of the lake (Figure 2). Upon returning from a day's fishing, as many fishermen (estimated 90%) as possible were interviewed. The landing site at the picnic grounds is the only access point to the lake.

Anglers were questioned as to the number of hours fished, the number and species of the fish caught and released and the anglers' place of residence (Appendix 2).

In addition, 32 northern pike and 195 walleye were weighed and measured with an ageing structure removed for later age determination. Round weight was recorded in grams and fork length in centimeters. Fin samples for ageing consisted of the first two dorsal spines on walleye and the first two rays from the left pelvic fin on northern pike.

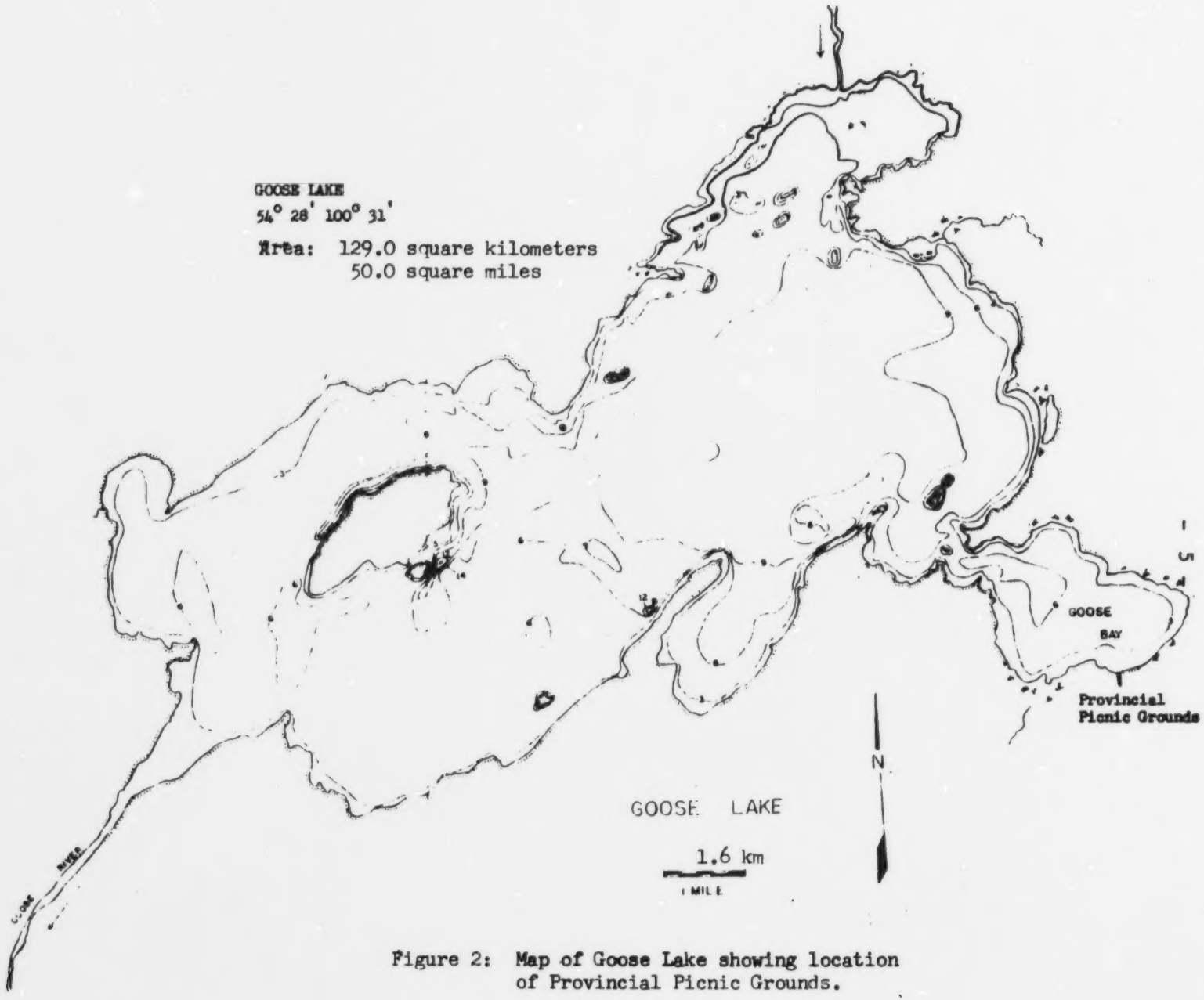


Figure 2: Map of Goose Lake showing location of Provincial Picnic Grounds.

RESULTS

During the angling season at Goose Lake, an estimated 14,000 principal game fish were caught. Approximately 5,000 game fish were retained. The total estimated angler harvest for Goose Lake in 1979 was 3,600 kg or 0.28 kg/ha of game fish; northern pike and walleye, (Appendix 3a, 3b, & 4). Ryder's index, based on total dissolved solids and mean depth, indicates Goose Lake has a maximum sustainable yield (MSY) equivalent to 148,221 kg of all species for the whole lake. Using Schlick's gill netting survey of 1967-1968, game fish comprised 61.3% of the total fish caught. Sixty-one point three percent of the MSY is roughly 90,859 kg of game fish which is significantly greater than what is presently estimated to be harvested each summer. Caution must be exercised and the commercial harvest of northern pike and walleye must be added on to the estimated harvest of game fish.

The two principal game fish of Goose Lake are northern pike and walleye. They comprised 61.4% and 37.6% of the total catch respectively (Table 1). The average catch/angler hour is 6.63 game fish (Appendix 1).

Origin of Anglers

Manitoba accounted for 70% of the anglers utilizing Goose Lake in 1979; Americans comprised the remaining thirty percent (Table 2).

Table 1. Actual number of fish caught and retained during the creel census survey on Goose Lake, 1979 Kg (lbs)

Species	Number Caught	Number Retained	% Retained	Average Weight	Weight Retained	% of Total Catch
Northern pike	2123	104	4.9	1.12 (2.5)	116.5 (260)	61.4
Walleye	1301	1228	94.4	0.69 (1.5)	847.3 (1842)	37.6
Cisco	32	30	93.8	-	-	0.9
Whitefish	1	0	0	-	-	0.03
Sucker	1	0	0	-	-	0.03
Perch	1	1	100	-	-	0.03
Total	3459	1363	-	-	-	100.0

Table 2. Origin of Angler from Goose Lake Creel Census, 1979

	# of Parties Interviewed	% of Total # of Parties
American	33	30.0
Canadian (Non-Manitoban)	0	0
Manitoban	77	70.0
Other	0	0
Totals	110	100.0

Northern pike *(Esox lucius)*

During the 22 randomly selected days of the creel census, 32 northern pike were sampled. The actual creel census catch per angler hour is calculated at 4.11 northern pike/angler hour (Appendix 1). The estimated figure for the fishing season is 4.26 northern pike/angler hour (Table 4). Based on Andrew's fishing success scheme, angling for northern pike in Goose Lake is excellent (Table 3). This may be due to the type of intensive seasonal fishing pressure that Goose Lake experiences. Average weight based on 32 northern pike samples was 1.12 kg (Table 1).

Length-Weight Relationship

The length-weight relationship for northern pike sampled is illustrated in Figure 3. The equation for the regression is $y = m(x) + B$ and can be expressed as follows: Weight = -3040.09 + 7.52 (length), r = .91

Age and Growth

The growth rate of northern pike is illustrated in Figure 4. Also shown is the size range and average length for each class. Age 4 and 7 have the broadest range. Table 5 shows the mean length and the actual number of fish associated with each class.

Age and Length Frequencies

Length frequency for northern pike is shown in Figure 5. Age frequency is shown in Figure 6. Actual number of fish are shown directly above the class columns. The modal age of northern pike that were sampled from Goose Lake is 5 and have a mean length of 52.89 cm (Table 5). This age

Table 3. EVALUATION SCHEME OF FISHING SUCCESS BASED ON CATCH PER UNIT EFFORT (ANDREWS, 1968)

Species	Poor	Fair	Good	Excellent
Pike	0.00 - 0.06	0.07 - 0.21	0.22 - 0.64	0.65 -
Perch	0.00 - 0.01	0.02 - 0.04	0.05 - 0.13	0.14 -
Walleye	0.00 - 0.09	0.10 - 0.24	0.25 - 0.55	0.56 -
Lake Trout	0.00 - 0.01	0.02 - 0.04	0.05 - 0.07	0.08 -

Table 4. Creel census estimates of northern pike for Goose Lake, 1979.

Stratum	Number of Fish Caught	Standard Error	Angler Hours	Number of Fish Per Angler Hour
May Weekend & June Weekday	4169	2540.4	895	4.66
May Weekend	1805	1398.1	395	4.57
June Weekend	1821	244.9	560	3.25
July Weekday	ø	ø	ø	ø
July Weekend	150	125.5	33	4.50
August Weekday & September Weekday	1322	599.7	292	4.53
August Weekend	135	99.4	30	4.50
Total	9402	2974.0	2205	4.26

Total estimated numerical catch of northern pike = 9402 $\pm$ 5948 (Appendix 3b)

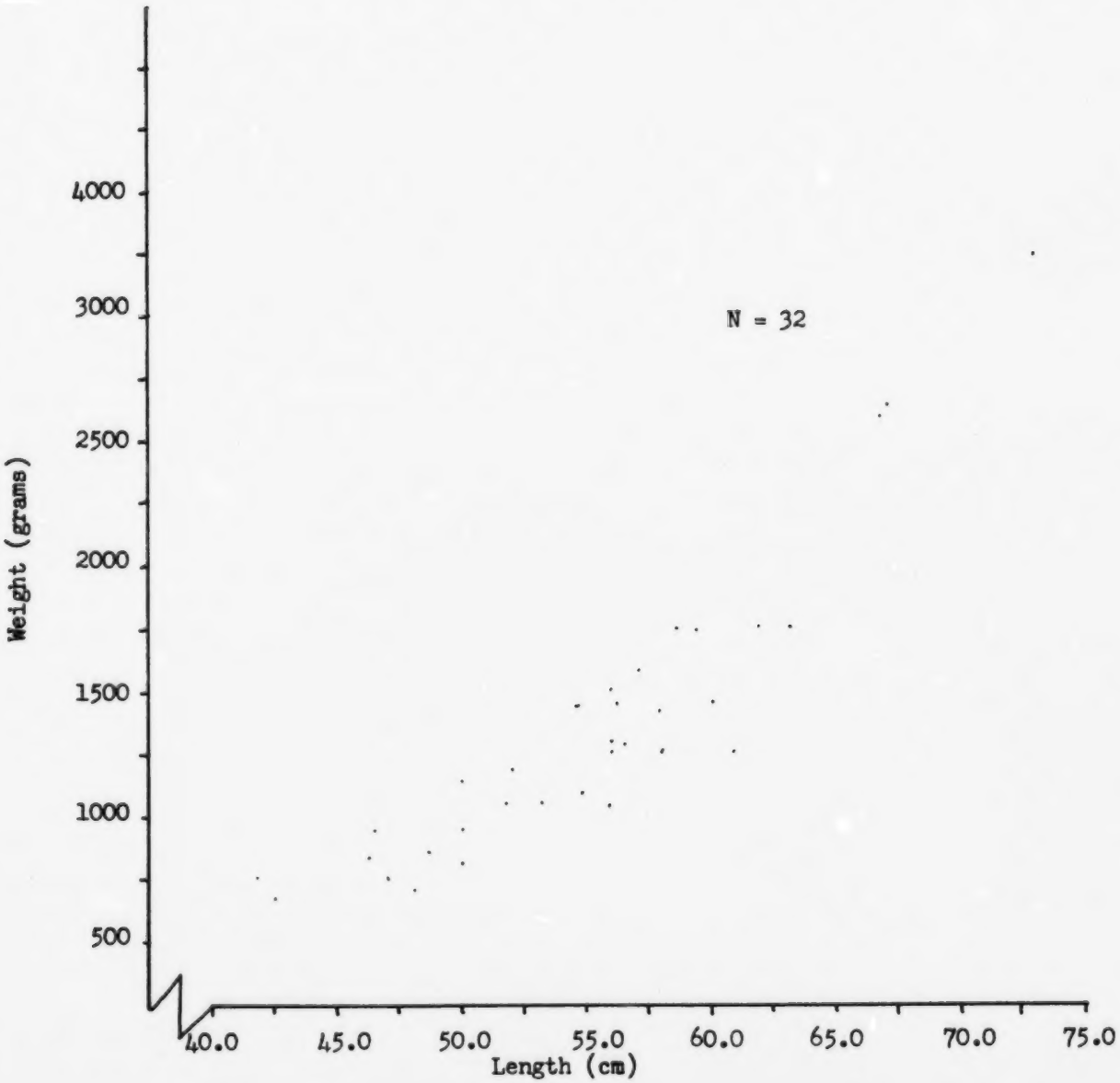


Figure 3. Length-weight relationship of northern pike sampled in creel census survey at Goose Lake, 1979.

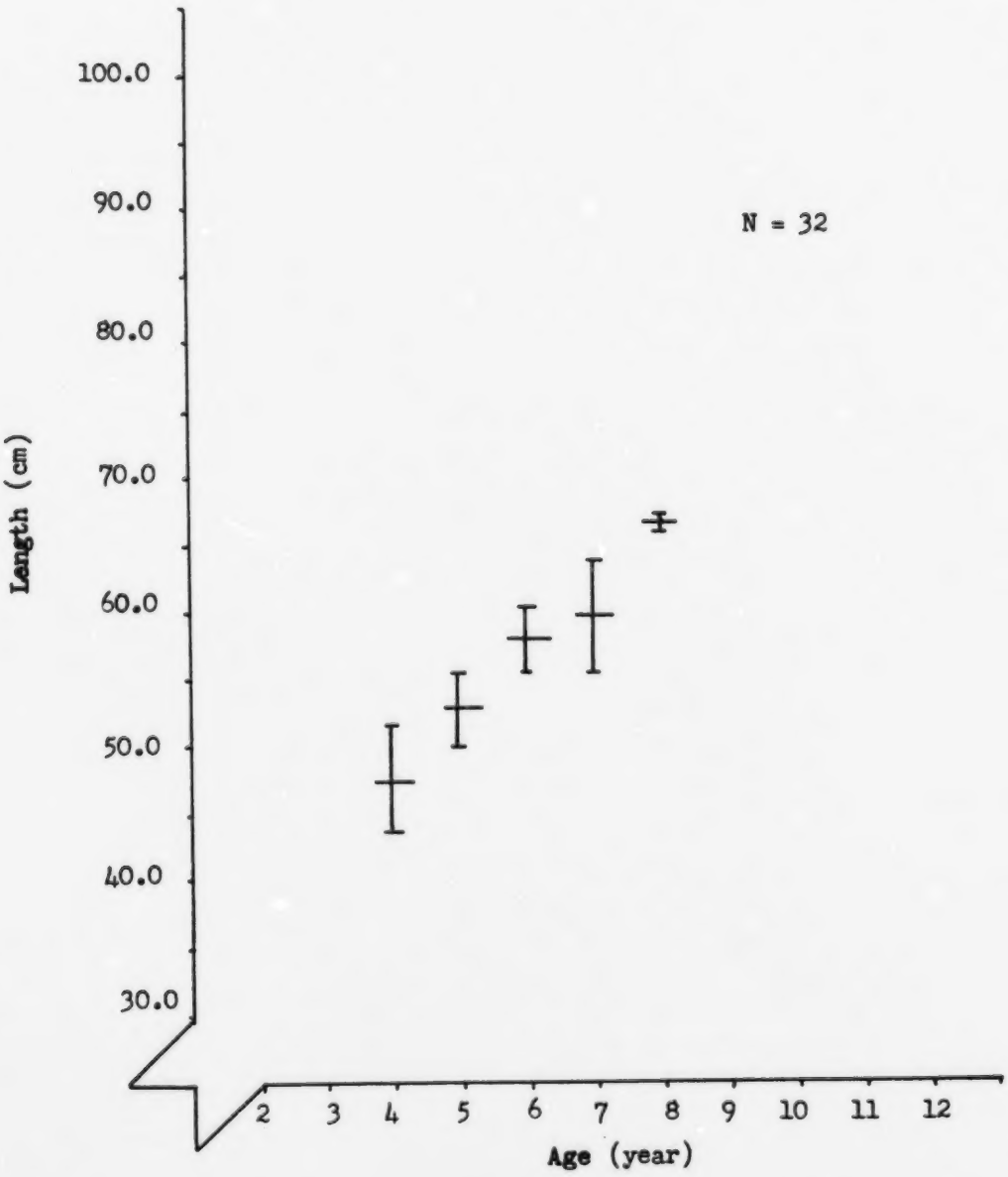


Figure 4. Growth rate of northern pike sampled in creel census survey at Goose Lake, 1979.

Table 5. Age and mean fork length of northern pike sampled during creel census survey at Goose Lake, 1979.

AGE	MEAN LENGTH OF AGE CLASS (cm)	ACTUAL NUMBER OF AGE CLASS
4	47.63	6
5	52.89	11
6	58.00	5
7	59.81	8
8	66.70	2
		N = 32

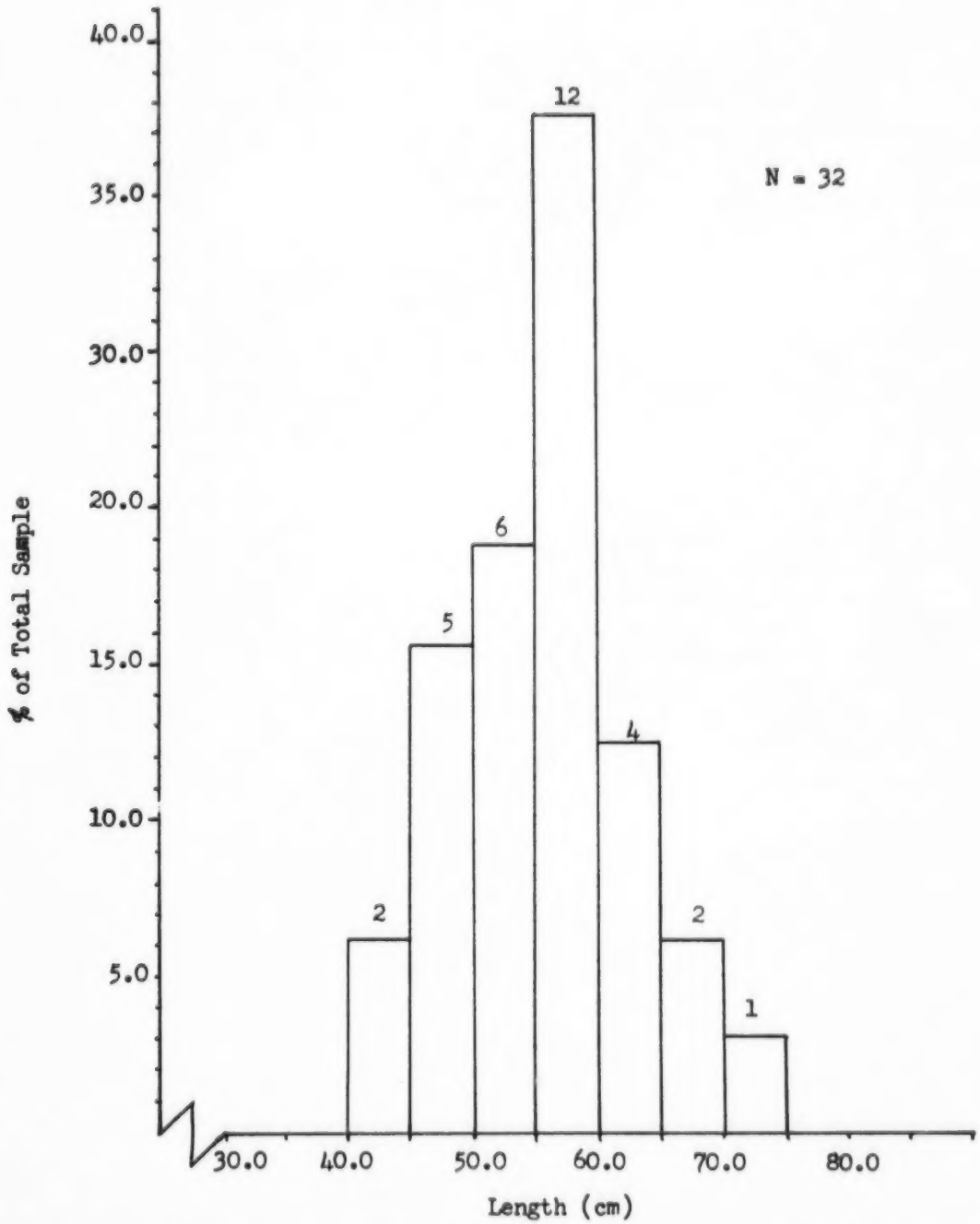


Figure 5. Length frequency distribution of northern pike sampled during creel census survey at Goose Lake, 1979.

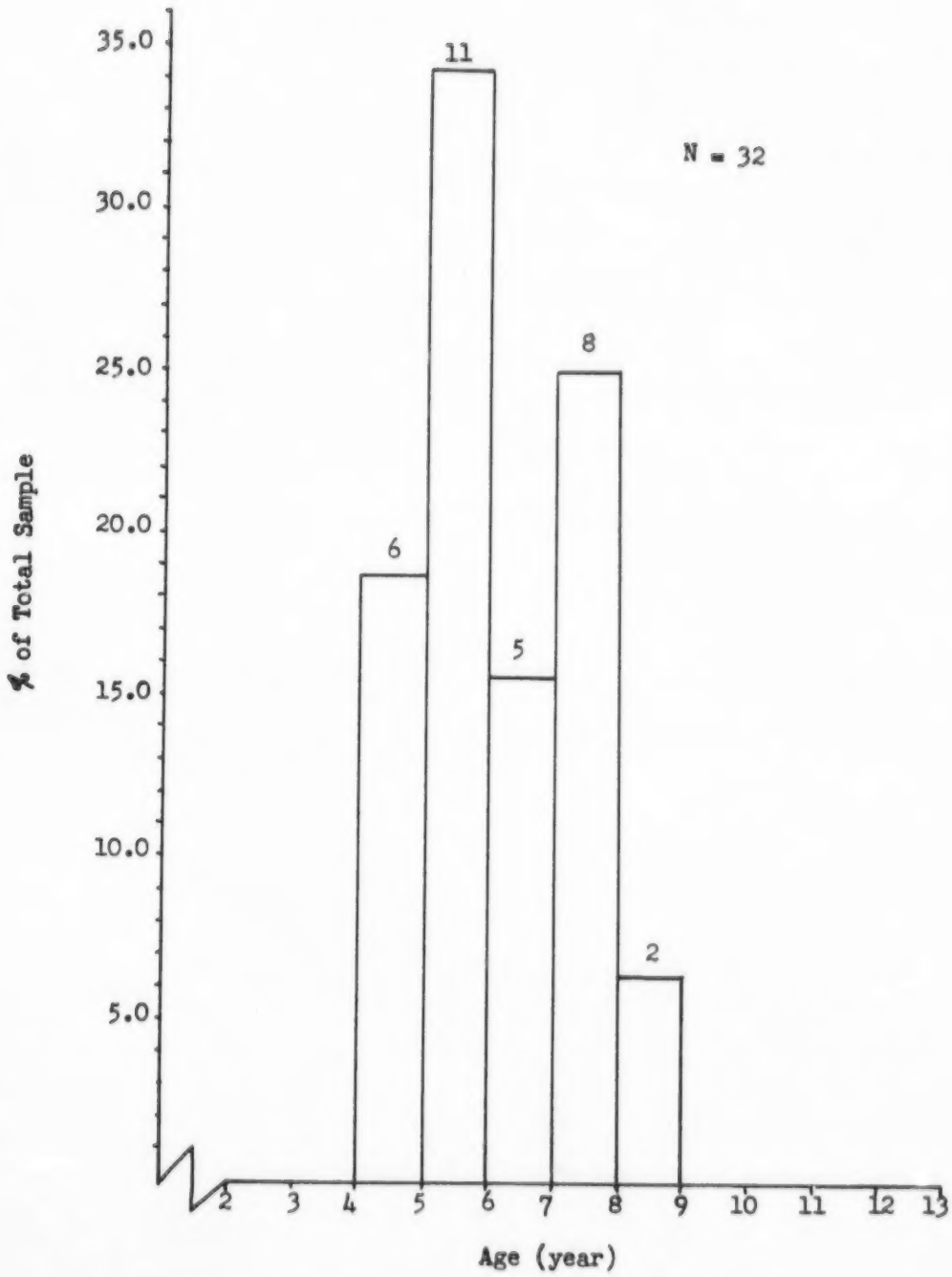


Figure 6. Age frequency distribution of northern pike sampled during creel census survey at Goose Lake, 1979.

class represents 34.9% of the total fish sampled. The modal length for northern pike is 55.0 - 55.9 cm or 37.5% of the sample size.

Angler Catch of Northern pike

The catch per unit effort remains high and constant throughout the summer, ranging from 3.25 to 4.66 (Table 4).

The actual angler harvest from the creel census survey was 116.5 kg of northern pike (Table 1 and Appendix 1). This represents 12% of the total game fish harvested during the creel census survey (Appendix 1).

The estimated angler harvest was 516 kg of northern pike (Appendix 4). This is 14.3% of the total estimated angler harvest of game fish for Goose Lake in 1979 (Appendix 3a & 4).

Walleye (*Stizostedion vitreum vitreum*)

During the 22 randomly selected days of the creel census, 195 walleye were sampled. The actual creel census catch per angler hour is calculated at 2.52 walleye per angler hour (Appendix 1). The estimated figure for the fishing season is 2.16 walleye per angler hour (Table 6). Once again, based on Andrew's fishing success scheme, angling walleye is extremely high (Table 3).

The average weight based on 195 walleye sampled was 0.69 kg (Table 1).

Table 6. Creel census estimates of walleye for Goose Lake, 1979

Stratum	Number of Fish Caught	Standard Error	Angler Hours	Number of Fish Per Angler Hour
May Weekday & June Weekday	1653	731.4	895	1.85
May Weekend	1705	1320.7	395	4.32
June Weekend	891	211.8	560	1.59
July Weekday	ø	ø	ø	ø
July Weekend	30	25.1	33	.90
August Weekday & September Weekday	338	177.3	292	1.16
August Weekend	156	127.4	30	5.20
Total	4774	1540.2	2205	2.16

Total estimated numerical catch of walleye = 4774 $\pm$ 3080 (Appendix 3a)

Length-Weight Relationship

The length-weight relationship for walleye is illustrated in Figure 7. The equation for the regression is $y = m(x) + B$ and can be expressed as follows: Weight = $-1051.07 + 4.29$ (length), $r = .93$

Age and Growth

The growth rate for walleye is shown in Figure 8. Also shown are the size range of each age class and the average length for that class. Age 12 has the broadest range. Table 7 shows the mean length and the actual numbers of fish associated with each age class.

Age and Length Frequencies

Age frequency for walleye is shown in Figure 9. Length frequency is shown in Figure 10. Actual numbers of fish in each age class are shown directly above the class columns. The modal age of walleye that were sampled from Goose Lake is 7 and has a mean length of 39.00 cm (Table 7). This age class represents 28.2% of the total fish sampled. The modal length for the same sample size is 40.9 - 44.9 cm which comprises 40.0% of the total sample size.

Angler Catch of Walleye

The catch per unit effort fluctuates dramatically, ranging from .90 - 5.20 (Table 6).

The actual angler harvest from the creel census survey was 847.32 kg of walleye (Table 1 and Appendix 1). This represents 88% of the total game fish harvest during the creel census survey (Appendix 1).

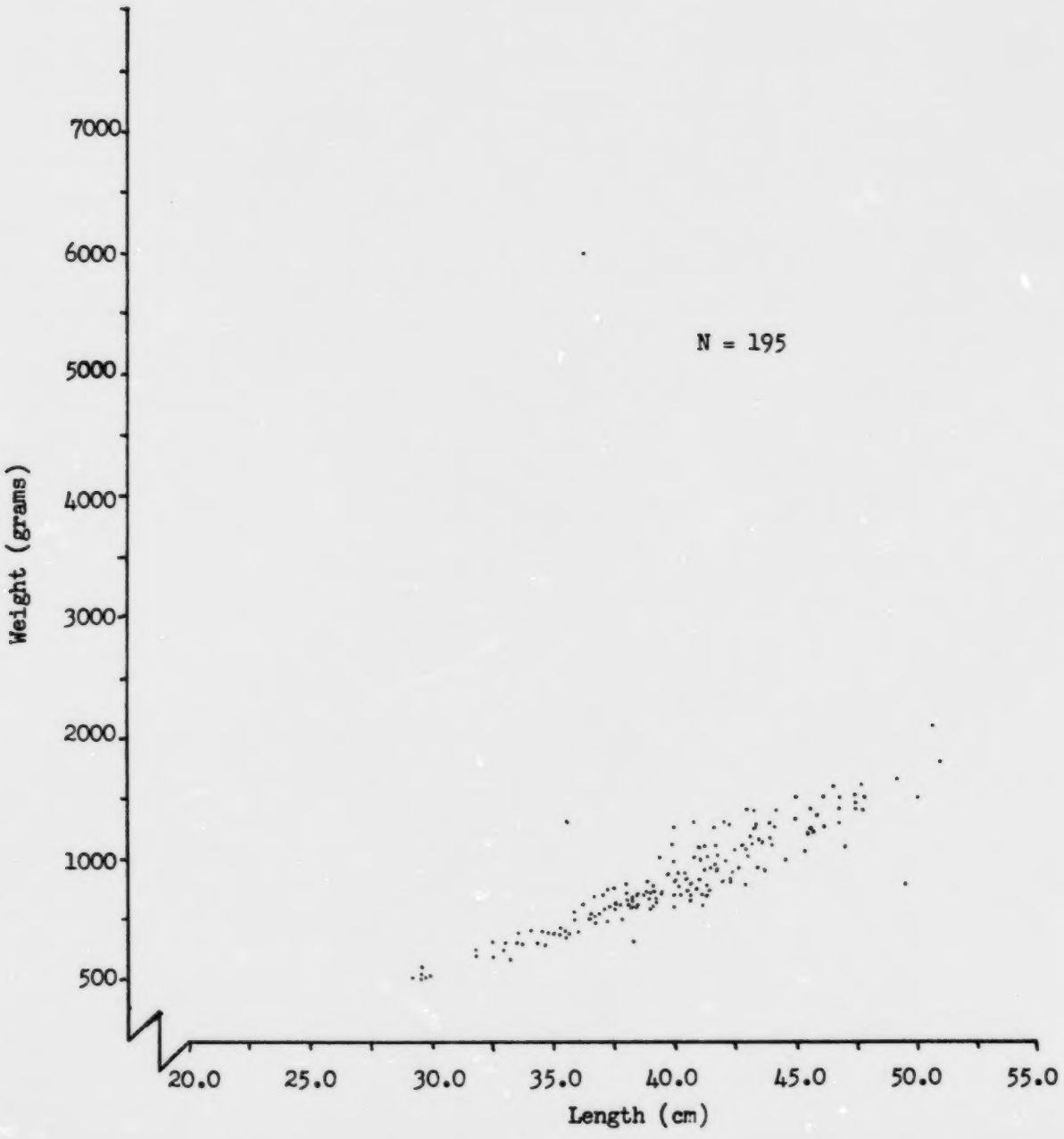


Figure 7. Length-weight relationship of walleye sampled in creel census survey at Goose Lake, 1979.

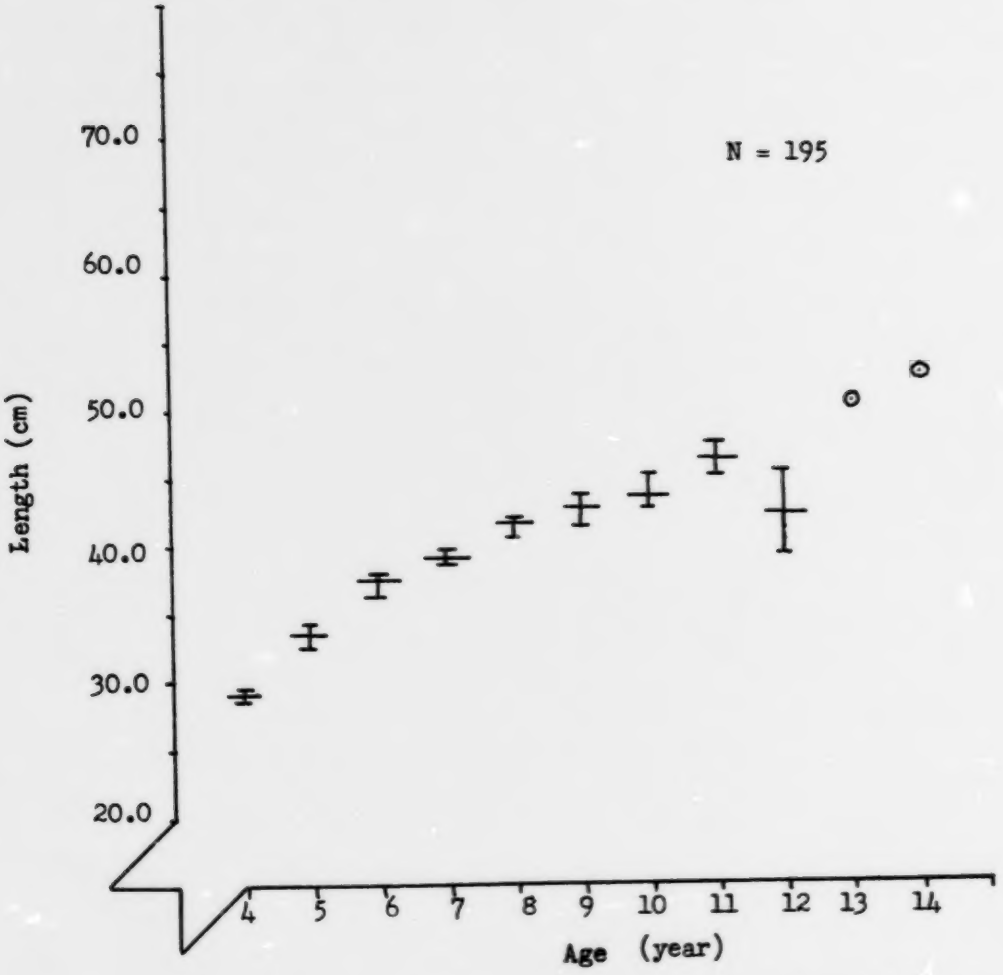


Figure 8. Growth curve of walleye sampled in creel census survey at Goose Lake, 1979.

Table 7. Age and mean fork length of walleye sampled during creel census survey at Goose Lake, 1979

AGE	MEAN LENGTH OF AGE CLASS (cm)	ACTUAL NUMBER OF AGE CLASS
4	29.36	5
5	33.49	16
6	37.19	21
7	39.00	55
8	41.06	36
9	42.63	23
10	43.83	18
11	46.32	13
12	43.35	6
13	50.90	1
14	52.20	1
		N = 192

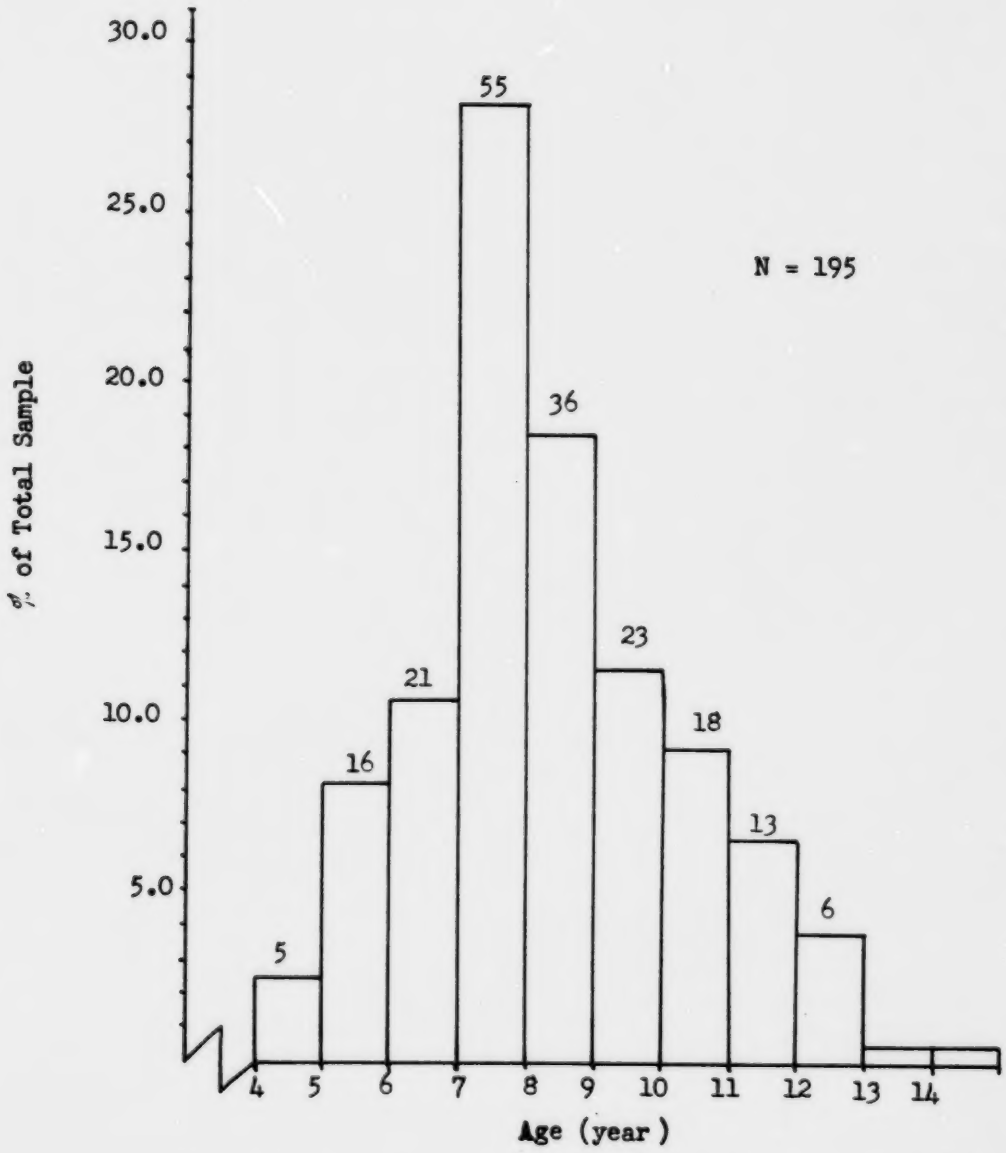


Figure 9. Age frequency distribution of walleye sampled during creel census survey at Goose Lake, 1979

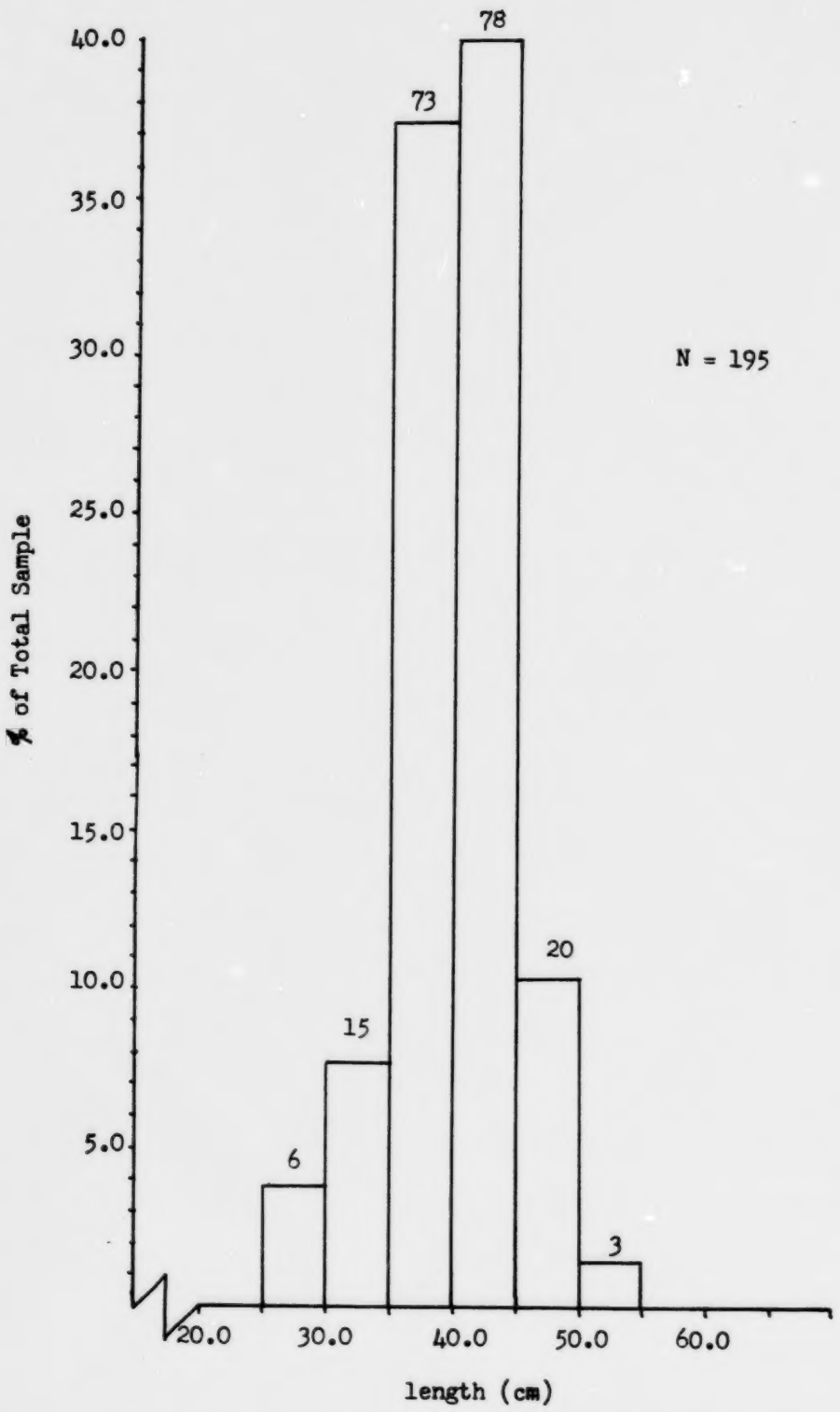


Figure 10 Length frequency distribution of walleye sampled during creel census survey at Goose Lake, 1979.

The estimated angler harvest was 3109.8 kg of walleye (Appendix 4). This represents 86.4% of the total estimated angler harvest of game fish for Goose Lake in 1979 (Appendix 3b & 4).

DISCUSSION

The high success rate of anglers at Goose Lake (6.63 game fish/ angler hour) is due to the fact that it receives intensive seasonal fishing (spring, fall and late winter) (Appendix 1, Tables 4 & 6. It is heavily fished when the "fishing has been traditionally good" and avoided during poor times (Appendix 1). Conservation Officers (personal communication) report that during the winter, Goose Lake anglers harvest equal or greater amounts of game fish than harvested in the summer.

During the 22 randomly selected creel census sampling days, the harvest from anglers interviewed was 1,332 game fish of which 104 were northern pike and 1,228 were walleye. This represented a total game fish harvest of 1,000 kg; this is comprised of 116 (11.6%) northern pike and 847 (84.7%) walleye (Appendix 1). The number of walleye caught and retained compared to the number of northern pike caught and retained, suggest that Goose Lake is primarily a walleye lake. The total number of walleye retained seems to indicate that they are primarily sought for eating. The angling of northern pike seems to be incidental (Table 1, Appendix 1).

The estimated number of game fish retained is 5,000; northern pike represented 461 and walleye 4,507. The estimated number of kg of game fish retained was 516.3 kg of northern pike and 3,109.8 kg of walleye. The estimated summer angler harvest from Goose Lake during the creel census survey in 1979 was 3,600 kg of game fish (Appendix 4).

While no estimate of the winter angler harvest is available, the catch of game fish is reported to be equal or greater than the summer angler harvest (personal communication - Natural Resource Officers).

The MSY of Goose Lake is calculated at 148,221 kg of all species of fish. Game fish comprised 61.3% of the total fish caught in Schlick's gill netting survey of 1967-68. The 61.3% represents the MSY for game fish for Goose Lake of 90,859 kg annually. The total estimated summer angler harvest of game fish is 3,600 kg. This, theoretically, leaves an estimated 87,259 kg for Goose Lake. Although the MSY calculations for Goose Lake indicate a high potential production, this may be misleading. Ryder et al suggests that portions or sections of shallow water lakes in north temperate regions may winterkill and therefore the lakes may not reach their full biotic potential every year. The mean depth of Goose Lake is 1.8 meters. In view of this, the present harvest levels may be closer to the actual MSY figure than the creel census data indicates.

The 1979 commercial harvest (Appendix 1) figure of 16,048 kg of whitefish, tullibee, northern pike and walleye must also be considered. Of this 16,048 kg, northern pike comprised 706.2 kg (4.4%), walleye 230.4 kg (1.4%), whitefish 11,914.0 kg(74.2%) and tullibee 3,197.4 kg (20.0%).

The combined sports and commercial harvest of game fish for Goose Lake in the summer of 1979 is 4,537 kg or 3.1% of the total MSY of Goose Lake.

The combined sports and commercial fish harvest for Goose Lake in 1979 is 19,648 kg or 13.3% of the total MSY of 148,221 kg for all species.

Goose Lake presently supports a Parks Branch Water Access and Picnic Site on the southeast corner of the lake and is regularly used in the spring by approximately seven lodges in the Cranberry Portage area as an "out lake" complete with boat caches. There is one domestic fishing permit issued each year, but the amount of kg harvested from this operation is insignificant.

Since we realistically cannot expect any decline in commercial or sport fishing pressure and/or possible future commercial developments on Goose Lake, the maintenance of the present fishing quality does not seem to warrant any special regulations.

The length-weight relationship of northern pike from Goose Lake shows no fish below 40.0 cm and 500 g (Figure 3). Table 8 is a comparison of nine selected Manitoba and Saskatchewan lakes. Goose Lake northern pike,when compared to the other lakes, shows a slower rate of growth. This discrepancy may be due to the insufficient sample size.

The data on northern pike is somewhat biased towards the ages 4 - 8 inclusive. This is probably the result of anglers selectively fishing younger fish which are more vulnerable than older fish to the fishing gear. Commercial fishing traditionally harvests older fish due to the fishing gear being selective to a specific size and age.

Table 8.

Comparison of northern pike growth in selected Saskatchewan and Manitoba lakes (FL - Fork length in inches; WT - Weight in pounds; Age in years; M - Male; F - Female).

			AGE															
			1+	2+	3+	4+	5+	6+	7+	8+	9+	10+	11+	12+	13+	14+	15+	16+	17+	18+
Goose Lake		FL	-	-	-	18.8	20.8	22.8	23.5	26.3	-	-	-	-	-	-	-	-	-	-
		WT	-	-	-	1.4	2.0	2.6	3.1	5.2										
Reed Lake[6]		FL	-	15.7	19.8	22.3	23.5	25.4	26.3	29.3	29.9	35.4	35.0	-	32.7	-	35.7	-	-	-
		WT	-	1.1	2.0	2.9	3.4	4.3	4.9	6.6	7.3	11.2	13.2	-	10.6	-	12.9	-	-	-
Gods Lake[5]		FL	-	-	-	26.1	28.9	30.0	30.9	33.2	35.6	38.3	-	-	-	-	-	-	-	-
		WT	-	-	-	4.3	5.9	7.1	7.9	10.0	11.9	16.9	-	-	-	-	-	-	-	-
Reindeer Lake[1]		FL	-	-	12.4	14.6	16.6	18.3	19.9	21.3	22.6	23.8	25.0	26.1	27.2	28.3	29.3	30.3	31.3	32.0
		WT	-	-	0.5	0.8	1.1	1.6	2.0	2.5	2.9	3.4	4.0	4.6	5.1	5.9	6.4	7.1	7.6	8.4
Wollaston Lake[2]		FL	-	13.8	17.1	20.1	24.2	26.3	29.4	-	30.4	-	37.8	41.5	-	-	-	-	-	-
		WT	-	0.7	1.4	2.2	3.8	4.9	7.1	-	8.1	-	-	-	-	-	-	-	-	-
Lac la Ronge[3] (Thomas Creek)	M	FL	7.4	15.0	19.3	21.9	23.6	24.9	-	-	-	-	-	-	-	-	-	-	-	-
	F	FL	7.0	14.6	19.9	24.0	26.3	28.1	-	-	-	-	-	-	-	-	-	-	-	-
Lac la Ronge[3] (Wood Creek)	M	FL	7.0	14.2	18.1	19.6	20.2	21.8	-	-	-	-	-	-	-	-	-	-	-	-
	F	FL	7.1	15.3	19.8	21.4	22.4	24.7	-	-	-	-	-	-	-	-	-	-	-	-
Peter Pond Lake[4]		FL	11.0	13.4	18.8	21.0	22.3	24.2	-	-	-	-	-	-	-	-	-	-	-	-
Churchill Lake[4]		FL	11.9	15.8	18.9	21.3	24.6	25.7	-	-	-	-	-	-	-	-	-	-	-	-

[1] Dean, 1975.

[2] Sawchyn, 1973.

[3] Koshininsky, 1970.

[4] Kallemeyn, 1973.

[5] O'Conner & Hagenson, 1978.

[6] Bruederlin, 1980.

The length-weight relationship of walleye from Goose Lake shows no fish below 25.0 cm and 500 g(Figure 7). Table 9 compares Goose Lake to seven other selected Saskatchewan and Manitoba lakes. Goose Lake walleye growth rate is just slightly slower or equal to the other lakes. Adams and Oliver (1977) paper suggests that lakes with long term percid yields greater than 1.25 kg/ha/year are likely to be considered as "problem lakes". Goose Lake walleye harvest from both commercial and sport fishing (creel census survey estimates) in 1979 is estimated at .3 kg/ha/year.

The age data on walleye covers age 4 - 14 inclusive. This is most likely due to the fact that they are primarily fished for food and consequently retained regardless of size.

One of the unfortunate drawbacks of this creel census study is the unavailability of winter angler harvest information. Due to manpower restraints and a lack of information on winter angling pressure, no creel census data was collected during the winter. Ideally, to obtain realistic annual angler harvest, the creel census survey should have extended into the winter season.

Based on data presented in this report, Goose Lake management should be maintained as a high resident use recreational fishery primarily for walleye. The lake should not be considered as a trophy or high quality fishery. Commercial net fishing should be allowed to continue operating under the present conditions.

Table 9.

Comparison of walleye growth in selected Saskatchewan and Manitoba lakes (FL - For length in inches; WT - Weight in pounds; Age in years).

		AGE																
		1+	2+	3+	4+	5+	6+	7+	8+	9+	10+	11+	12+	13+	14+	15+	16+	17+	18+
Goose Lake	FL				11.6	13.2	14.6	15.4	16.2	16.8	17.3	18.2	16.7	20.0	20.5				
	WT				0.6	0.9	1.1	1.3	1.5	1.7	1.9	2.1	1.6	3.4	2.9				
Reed Lake[7]	FL	-	-	-	12.4	12.6	15.3	16.2	17.7	18.0	19.4	19.0	22.2	22.2	24.4	24.2	-	-	27.1
	WT	-	-	-	0.7	1.0	1.4	1.7	2.3	2.4	2.9	2.8	4.4	4.1	4.6	5.3	-	-	7.4
Gods Lake[6]	FL	-	-	-	14.8	17.2	18.9	21.1	23.4	25.2	-	-	-	-	-	-	-	-	-
	WT	-	-	-	1.2	1.9	2.6	3.6	4.9	5.8	-	-	-	-	-	-	-	-	-
Reindeer Lake[1]	FL	-	6.6	8.7	10.6	12.4	14.0	15.8	17.3	18.5	19.6	20.5	-	-	-	-	-	-	-
	WT	-	0.1	0.6	0.4	0.7	1.1	1.6	2.2	2.8	3.3	3.8	-	-	-	-	-	-	-
Black Lake[2]	FL	-	-	-	9.2	10.8	12.3	13.9	15.4	16.9	18.2	19.4	20.4	-	-	-	-	-	-
Lac la Ronge[3]	FL	-	7.2	9.8	12.8	13.9	15.6	17.0	18.8	20.0	21.5	22.8	24.0	25.1	-	-	-	-	-
	WT	-	0.2	0.4	0.6	0.9	1.3	1.7	2.2	2.6	3.2	3.8	4.6	5.8	-	-	-	-	-
Turnor and Wasekamio Lakes[4]	FL	-	8.3	9.7	11.1	12.1	13.6	15.3	16.5	-	-	-	-	-	-	-	-	-	-
	WT	-	0.3	0.4	0.6	0.8	1.1	1.5	1.9	-	-	-	-	-	-	-	-	-	-
Peter Pond Lake[5]	FL	4.0	6.3	8.6	10.8	12.7	14.4	16.0	17.3	18.5	-	-	-	-	-	-	-	-	-
	WT	0.04	0.09	0.2	0.5	0.9	1.3	1.8	2.4	2.8	-	-	-	-	-	-	-	-	-

[1]Dean 1975.

[2]Johnson 1971.

[3]Rawson and Atton 1953.

[4]Kallemeyn 1973a.

[5]Kallemeyn 1973b.

[6]O'Conner & Hagenson 1978.

[7]Bruederlin 1980.

SUMMARY

1. A creel census of Goose Lake was done during the summer angling season of 1979.

2. The angler harvest of Goose Lake from the creel census survey is composed mainly of northern pike, 4.26 fish/angler hour and walleye, 2.16 fish/angler hour.

3. The estimated summer angler harvest from the creel census survey is 3,600 kg of game fish, composed of 516 kg of northern pike and 3,110 kg of walleye.

4. The speculated winter angler harvest from Conservation Officers' reports is equal or greater than creel census survey estimates.

5. The commercial quota is 25,500 kg of northern pike, walleye, and whitefish, of which not more than 2,300 kg may be northern pike and walleye.

6. The commercial harvest of game fish in 1979 was 936 kg or 706 kg of northern pike and 230 kg of walleye.

7. The total game fish harvest from Goose Lake in 1979 was 4,537 kg.

8. Angler success at Goose Lake rates excellent for northern pike and walleye (Table 3).

9. There were 32 northern pike sampled. They ranged from 42.2 cm to 72.8 cm in length and 450 g to 3,000 g in weight.

10. There were 195 walleye sampled. They ranged from 28.6 cm to 52.5 cm in length and 250 g to 1,550 g in weight.

11. The present level of exploitation of the fish stocks of Goose Lake (northern pike and walleye) is approximately 3.1% of the MSY. Goose Lake would appear capable of maintaining the present level of fishing quality for many years in view of the present level and expected increases in future years.

12. Origin of anglers utilizing Goose Lake in 1979 was 30% non-resident Americans and 70% Manitobans.

RECOMMENDATIONS

1. Creel census should be repeated occasionally to monitor increasing levels of exploitation of the fish stocks of Goose Lake.

2. Periodic sampling should be done to effectively monitor the commercial harvest of the lake.

3. Maintain present management strategy which appears to be successful in view of the excellent quality of angling.

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APPENDIX 1

SUMMARY OF CREEL DATA CALCULATIONS FROM GOOSE LAKE, 1979

Length of season May 15 - October 15 — 154 days

Length of creel census — 22 days

May 20, 26, 31
June 6, 9, 10, 13, 14, 23
July 8, 9, 16, 18, 21, 22
August 4, 6, 19, 21, 27, 28
September 4

Number of fishermen interviewed

357

Estimated percentage interviewed

90%

Total fish caught

northern pike	2123
walleye	1301
cisco	32
sucker	1
whitefish	1
perch	1
Total	3459

Total fish retained

northern pike	104	x	1.12 kg =	116.48 kg
walleye	1228	x	0.69 kg =	847.32 kg
cisco	30			963.80 kg
sucker	0			
whitefish	0			
perch	1			
Total	1363			

Percent retained

northern pike	4.9%
walleye	94.4%

Average catch/angler/hour

6.70*[1]
6.63*[2]

Total game fish harvested
963.8 kg
Rounded to nearest 100 kg =
1000 kg

*[1] for all fish caught

*[2] for game fish only (northern pike and walleye)

(N.B. Assuming total hours spent fishing were for game fish only)

ANGLING SUMMARY GOOSE LAKE, 1979

Date	Total Hours Fished	Number of Anglers	Species	Total Fish Caught	Fish/ Angler Hour	Total Fish Retained	Fish Retained/ Angler Hour
May 20	.5	2	pike	0	0	0	0
			walleye	0	0	0	0
			Total	0	0	0	0
May 26	157.5	119	pike	722	4.58	30	.19
			walleye	682	4.33	632	4.01
			cisco	17	-	15	-
			sucker	1	-	-	-
			whitefish	1	-	-	-
			Total	1423	8.91	677	4.20
May 31	11.0	20	pike	13	1.18	-	-
			walleye	16	1.45	16	1.45
			cisco	1	-	1	-
			Total	30	2.63	17	1.45
June 6	6	8	pike	15	2.50	7	1.17
			walleye	5	0.83	5	0.83
			Total	20	3.33	12	2.00
June 9	96.5	60	pike	256	2.65	24	.25
			walleye	156	1.62	155	1.61
			cisco	3	-	3	-
			Total	415	4.27	182	1.86
June 10	69.5	46	pike	201	2.89	12	0.17
			walleye	78	1.12	76	1.09
			cisco	5	-	5	-
			Total	284	4.01	93	1.26
June 13	65.5	26	pike	414	6.32	19	0.29
			walleye	112	1.71	110	1.68
			cisco	5	-	5	-
			Total	531	8.03	134	1.97
June 14	41	30	pike	133	3.24	6	0.15
			walleye	95	2.31	83	2.02
			cisco	1	-	1	-
			Total	229	5.55	90	2.17

Date	Total Hours Fished	Number of Anglers	Species	Total Fish Caught	Fish/ Angler Hour	Total Fish Retained	Fish Retained/ Angler Hour
June 23	20.5	12	pike	150	7.32	-	-
			walleye	63	3.07	57	2.78
				213	10.39	57	2.78
July 8	10.0	6	pike	45	4.50	1	0.10
			walleye	9	0.90	9	0.90
			perch	1	-	1	-
			Total	55	5.40	11	1.00
July 9							
July 16							
July 18			NO ANGLING				
July 21							
July 22							
Aug. 4							
Aug. 6	1.5	2	pike	3	2.00	1	.67
			Total	3	2.00	1	.67
Aug. 19	8.5	8	pike	42	4.94	-	-
			walleye	52	6.12	52	6.12
			Total	94	11.06	52	6.12
Aug. 21	5	8	pike	16	3.20	-	-
			walleye	1	0.20	1	0.20
			Total	17	3.40	1	0.20
Aug. 27	8	4	pike	43	5.38	3	0.38
			walleye	14	1.75	14	1.75
			Total	57	7.13	17	2.13
Aug. 28	15.5	6	pike	70	4.52	1	0.06
			walleye	18	1.16	18	1.16
			Total	88	5.68	19	1.22
Sept. 4			NO ANGLING				

TOTAL FOR CREEL CENSUS

Date	Total Hours Fished	Number of Anglers	Species	Total Fish Caught	Fish/ Angler Hour	Total Fish Retained	Fish Retained/ Angler Hour
	516.5	357	pike	2123	4.11	104	0.20
			walleye	1301	2.52	1228	2.38
			cisco	32	0.06	30	0.06
			sucker	1	.002	0	0
			whitefish	1	.002	0	0
			perch	1	.002	1	0
			Total	3459	6.70	1363	2.64

APPENDIX 2

CREEL CENSUS RECORD SHEET

CREEL CENSUS FORM

Lake or stream .....

No. anglers reporting on this form .....

Fished from ..... A.M. P.M. to ..... A.M. P.M.

TOTAL CATCH

SPECIES	No. Caught	No. Retained	Estimated weight of Retained Fish
Pike			
Walleye			
Perch			
Rainbow Tr.			
Brook Tr.			
Lake Tr.			
Splake			
Others (specify)			

Fished from - - - - - Boat ☐ Shore ☐ Ice ☐

Submitted by .....

Address ..... Date .....

Place any remarks on reverse side.

RETURN COMPLETED FORM TO YOUR ASSOCIATION

MG-656

APPENDIX 3a

Northern Pike

$$S.E. = \sqrt{(2974.0)^2}$$

$$S.E. = \sqrt{8844676.0}$$

$$S.E. = 2974$$

$$S.E. = 2974 \times 2$$

$$S.E. = 5948$$

9402 ± 5948	estimated number caught
4.90%	percentage retained
461 x 1.12 kg	estimated number retained
516.3 kg	estimated kg retained

APPENDIX 3b

Walleye

$$S.E. = \sqrt{(1540.2)^2}$$

$$S.E. = \sqrt{2372216.04}$$

S.E. = 1540.2

S.E. = 1540.2 x 2

S.E. = 3080.4

4774 $\pm$ 3080	estimate number caught
94.40%	percentage retained
4507 x .69 kg	estimated number retained
3109.8 kg	estimated kg retained

APPENDIX 4

ORIGIN OF FIGURES

Estimated angler harvest (caught)

northern pike	9,402		
walleye	4,774		
	14,176	⟶	14,000

Estimated angler harvest (retained)

northern pike	461		
walleye	4,507		
	4,968	⟶	5,000

Estimated kg harvest

northern pike	461 x 1.12 kg	⟶	516.3 kg
walleye	4,507 x .69 kg	⟶	3109.8 kg
			3626.1 kg
		↓	
			3600 kg

APPENDIX 5. Historical marketed catch records from Goose Lake in pounds (w = walleye, wh = whitefish, p = pike)

Season	Limit (lb x 1000)	Licences	walleye	pike	whitefish	tullibee (cisco)	Total Catch (lb)
1940 & early	150 w,wh	-					
1940 - 41	winter 50 w,wh	4	-	-	1500	-	1500
1941 - 42	winter 50 w,wh	-	-	-	-	-	-
1942 - 43	winter 50 w,wh	2	100	-	4100	900	5100
1943 - 44	winter 50 w,wh	2	-	-	4300	-	4300
1944 - 45	winter 50 w,wh	4	-	200	26300	4100	30600
1945 - 46	winter 50 w,wh	4	600	700	38400	8800	48500
1946 - 47	winter 50 w,wh	8	1400	800	22800	6400	31400
1947 - 48	winter 50 w,wh	6	600	1000	26400	1600	29600
1948 - 49	winter 50 w,wh	4	700	3100	23700	1600	29100
1949 - 50	winter 50 w,wh	4	500	1100	19400	700	21700
1950 - 51	winter 50 w,wh	7	-	1600	20200	4600	26400
1951 - 52	winter 50 w,wh	7	300	2300	57500	6800	66900
1952 - 53	winter 50 w,wh	7	-	1300	50800	700	52800
1953 - 54	winter 50 w,wh	7	-	200	53300	600	54100
1954 - 55	winter 50 w,wh	6	100	100	51100	-	51200
1955 - 56	winter 50 w,wh	7	100	500	54100	-	54700
1956 - 57	winter 50 w,wh	8	-	600	43100	-	43800
1957 - 58	winter 50 w,wh	6	100	200	17000	200	17500
1958 - 59	winter 50 w,wh	7	800	3000	18600	1900	27700*[1]
1959 - 60	winter 50 w,wh	4	200	1500	15600	700	18000
1960 - 61	winter 50 w,wh	6	400	3400	31100	300	35200

APPENDIX 5. Historical marketed catch records from Goose Lake in pounds (Continued)
(w = walleye, wh = whitefish, p = pike)

Season	Limit (lb x 1000)	Licences	walleye	pike	whitefish	tullibee (cisco)	Total Catch (lb)
1961 - 62	winter 50 w,wh	6	3278	939	20657	150	25024
1962 - 63	winter 50 w,wh	6	10440	14475	18891	-	43806
1963 - 64	winter 50 w,wh	6	23163	2251	24203	69	49656
1964 - 65	winter 50 w,wh	5	17639	841	21804	342	40626
1965 - 66	winter 50 w,wh,p	6	14732	2961	29111	1620	48424
1966 - 67	winter 50 w,wh,p	2	11173	2905	22512	3055	39645
1967 - 68	winter 50 w,wh,p	6	8401	2156	25961	2675	98785*[2]
1968 - 69	winter 50 w,wh,p	6	4975	1622	20401	1815	28813
1969 - 70	winter 50 w,wh,p	6	1680	780	32580	5280	40320
1970 - 71	winter 50 w,wh,p	6	3404	2837	25133	3806	35180
1971 - 72	winter 50 w,wh,p	6	8910	1336	13891	3262	27399
1972 - 73	winter 50 w,wh,p	6	1081	2627	32300	4340	40378
1973 - 74	winter 40 w,wh,p	2	87	1279	18839	2184	22389
1974 - 75	winter 40 w,wh,p	2	1555	2328	30904	3580	38967*[3]
1975	summer 40 w,wh,p	6	372	301	37404	3109	41186
1975 - 76	winter 50 w,wh,p	1	-	563	2839	961	4363
1976	summer 50 w,wh,p	3	550	1276	26511	4681	33018
1976 - 77	winter 50 w,wh,p	1	318	1015	8580	2396	15309*[4]
1977	summer 50 w,wh,p	2	1691	538	39601	5342	47172
1977 - 78	winter 50 w,wh,p	1	-	334	1132	318	3486*[5]
1978	summer 50 w,wh,p	3	810	849	41944	2389	45992
1978 - 79	winter 50 w,wh,p	1	155	-	922	843	4820*[6]
1979	summer 50 w,wh,p	4	508	1557	26266	7049	35380

APPENDIX 5. Historical marketed catch records from Goose Lake in pounds (Continued)
(w = walleye, wh = whitefish, p = pike)

Season	Limit (lb x 1000)	Licences	walleye	pike	whitefish	tullibee (cisco)	Total Catch (lb)
1979 - 80	winter 50 w,wh,p	1	-	2377	3826	4188	31581*[7]
1980	summer *8	3	495	1403	13406	3875	19178

N.B. Data from 1940 - 41 to 1960 - 61 inclusive taken from Schlick (1973), rounded off to nearest 100 pounds.

N.B. Data earlier than 1940 from personal communication with Carl Wall.

*[1] includes 3400 lbs of suckers

*[2] includes 59592 lbs of burbot and suckers

*[3] includes 600 lbs of suckers

*[4] Includes 3000 lbs of suckers

*[5] includes 1702 lbs of suckers

*[6] includes 2900 lbs of suckers

*[7] includes 21190 lbs of suckers

*[8] New Quota regulations are 25,500 kg which not more than 2,300 kg may be walleye and pike.